UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MISSOURI
EASTERN DIVISION

UNITED STATES OF AMERICA,	)	
	)	Case No. 4:19-CR-980 HEA
Plaintiff,	)	
	)	
v.	)	**DEFENDANT HAITAO XIANG'S**
	)	**REPLY IN SUPPORT OF HIS MOTION**
HAITAO XIANG,	)	**FOR A BILL OF PARTICULARS**
	)	
Defendant.	)	
	)	

For the first time, the government admits in its opposition brief that the so-called trade

secret in this case actually consists of publicly available information. (Dkt. 62 at p. 11).

Notwithstanding this admission, the government claims that the alleged trade secret at issue is a

"combination" trade secret, which, in its view, excuses the public nature of the information at

issue here. Dr. Xiang, to his knowledge, is not aware of any other criminal case in which the

government has asserted (let alone a court permitted) that a combination of publicly available

materials supports a criminal trade secret prosecution.[1]

It should go without saying that not every combination of publicly-known elements is a

trade secret. For this reason, the government may not unilaterally declare, with no further

elaboration and without any scrutiny, that an 86-page document replete with public information

represents a combination trade secret. The combination trade secret doctrine was developed in

civil cases. To distinguish those legitimate combination trade secrets from the illegitimate,

courts require disclosure with particularity to ensure that a claimed trade secret meets a minimum

threshold of secrecy and also to ensure the defense is not unfairly surprised. The government

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[1]   Given the government's position, Dr. Xiang intends to separately file a motion to dismiss the indictment on the basis that the trade secret statute is void for vagueness as applied to him in this case.

may not rely on a civil trade secret doctrine and then claim that the protections developed in civil

litigation to prevent abuses do not apply in a criminal case where the stakes are highest. Basic

fairness—and the law—requires that the government identify the alleged secret that has been

stolen. Pointing to an 86-page document full of publicly available information does not meet

that test.

The Government's Shifting Description of the Alleged Trade Secret

The government believes that this Court should not require a bill of particulars because it

has "repeatedly identified" the supposed trade secret. These identifications, however, have been

vague and inconsistent, leaving Dr. Xiang completely perplexed. Within the opposition brief

itself—even within the same page—the government provides contradictory descriptions of what

it believes is the trade secret. For example, the government argues that it has previously

explained to defense counsel that the Nutrient Optimizer is a euphemism for the 86-page

document. (Dkt. 62 at 2.) Indeed it has. The indictment, however (which is block quoted in the

government's brief directly above this sentence), describes the Nutrient Optimizer differently:

"Monsanto and TCC developed a Nutrient Optimizer *that was a proprietary predictive*

algorithm. . ." (*Id.* quoting indict., ¶13) (emphasis added.) Does the government contend that

the Nutrient Optimizer is an 86-page document or a proprietary predictive algorithm? But that's

not all: the indictment continues, describing the Nutrient Optimizer as "an essential component

of the digital software platform" and "part of the application that worked as a web-based tool."

(*Id*.) Does the government mean that the Nutrient Optimizer is code that is a component of a

software program?

In contrast, the government's brief (at least in this paragraph) describes the Nutrient

Optimizer as "research conclusions behind the algorithm's development." (*Id.* at 3.) In the same

paragraph, however, the government shifts perspective again, discussing the "predictive

algorithm." The government's brief states that the "way in which [some variables] are used in

the algorithm is not public." (*Id.*) That may be, but the government has not (apparently) alleged

that Dr. Xiang has stolen an algorithm. It has said that the trade secret is an 86-page document,

not an algorithm. Whether the algorithm is secret or not secret is immaterial because Dr. Xiang

is not alleged to have stolen it.

In the next paragraph, the government describes yet a third embodiment of the Nutrient

Optimizer: a software program. Referencing paragraph 15 of the indictment, the government

describes the Nutrient Optimizer as various "modules" that simulate crop growth, water

availability, and soil temperature. A "white paper," as the government describes the trade secret,

is incapable of simulating anything, let alone crop growth or water availability. Simulations are

done by the software itself[2]—yet Dr. Xiang is not alleged to have taken any source code, object

code, or anything else comprising the software.

Whether or not it is doing so deliberately, the government's positions inconsistently

describe the supposed trade secret as an algorithm, a description of research, or a software

program, depending on the circumstances. Dr. Xiang should not be left to guess at what may or

may not be claimed secret, particularly when so much of the document at issue is public

information. At the very least, if the government is claiming that the supposed trade secret is a

combination of publicly available elements, it should be required to identify (1) each element

that makes up the combination that the government claims is a trade secret; (2) the functional

interrelationship of those elements; and (3) how the combination creates value above that of the

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[2]   Dr. Xiang notes that the government filed, under seal, a supplemental page of the indictment that references the trade name of the software itself. Dr. Xiang will not make direct reference to it here, but there is no legitimate basis why a registered trade name should be filed under seal.

sum total of its elements. If the government's position is that the trade secret is an algorithm,

then Dr. Xiang requests that the government clearly identify the exact functions and procedures

that make up the algorithm, where those functions and procedures are located in the document at

issue, and what parts of the algorithm are public and what parts are claimed to be secret.

<p style="text-align:center"><u>The Law of Combination Trade Secrets</u></p>

The government admits that its supposed trade secret consists of publicly available

materials,[3] but claims that because it is supposedly a "combination" trade secret, the public

nature of the elements does not destroy the trade secret status of the document. In order to

qualify as a trade secret, the information at issue must be, of course, secret. Merely

characterizing a collection of publicly available materials as a combination trade secret, however,

does not relieve the government of its obligation to prove that a secret exists. As the Eighth

Circuit has previously explained, "[s]imply to assert a trade secret resides in some combination

of otherwise known data, <u>is not sufficient</u>." *Strategic Directions Group v. Bristol-Myers Squibb

Co.*, 293 F.3d 1062, 1065 (8th Cir. 2002) (emphasis added). Instead, "the combination itself

must be delineated with some particularity in establishing its trade secret status." *Jostens, Inc. v.

Nat'l Computer Sys.*, 318 N.W.2d 691 (Minn. 1982) *cited in Strategic Directions*, *supra.*

The government argues that its production of an 86-page document and assertion that it

"is" the alleged trade secret is enough to meet its obligations. As the Seventh Circuit explained,

"no, it isn't:"

> According to IDX, 'a 43-page description of the methods and processes
> underlying and the inter-relationships among various features making up IDX's
> software package' is specific enough. No, it isn't. These 43 pages describe the
> software; although the document was created for this litigation, it does not

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[3] It seems incongruous that the government has taken the position that the document cannot even be shown
to Dr. Xiang or only to experts that meet Monsanto's approval, yet it admittedly contains information that is publicly
known. This reinforces Dr. Xiang's belief that the government's position on the protective order is not about
protecting the "secrecy" of the information, but more about crippling Dr. Xiang's ability to defend himself.

separate the trade secrets from the other information that goes into any software package. Which aspects are known to the trade, and which are not? That's vital under the statutory definition. Likewise, IDX's tender of the complete documentation for the software leaves mysterious exactly which pieces of information are the trade secrets.

Idx Sys. Corp. v. Epic Sys. Corp., 285 F.3d 581, 583-84 (7th Cir. 2002). Critical to the dispute here, the Seventh Circuit went on to explain that a party must do more than "identify a kind of technology and then invite the court to hunt through the details in search of items that meet the statutory definition." *Id.* This, however, is exactly the government's plan, but instead of inviting Dr. Xiang and the Court to hunt through a 43-page document, it invites us to hunt through a document doubly long and which includes items that are "exceedingly hard to call trade secrets." *Id.*

In addition to the Eighth and Seventh Circuits, courts around the country have rejected this tactic. *See, e.g.*, *Imax Corp. v. Cinema Techs., Inc.*, 152 F.3d 1161, 1164-65 (9th Cir. 1998) (stating that a party seeking relief for trade secret misappropriation must describe the trade secret in sufficient particularity to distinguish it from matters of general knowledge and entering judgment for defendant where plaintiff failed to do so); *Compuware Corp. v. IBM*, 2003 U.S. Dist. LEXIS 24894, at *17-18 (E.D. Mich. Dec. 19, 2003) (citing *Utilase, Inc. v. Williamson*, 188 F.3d 510 (6th Cir. 1999) (rejecting trade secret description as "too vague and over inclusive," and stating that a trade secret must be identified with specificity)); *Am. Science & Eng'g, Inc. v. Kelly*, 69 F. Supp. 2d 227, 238-39 (D. Mass. 1999) (finding that vagueness and lack of specificity doomed trade secrets claim); *Universal Computer Sys. v. Dealer Solutions, L.L.C.*, 183 S.W.3d 741, 745-46 (Tex. Ct. App. 2005) (recounting litigation history and fee awards for failure to identify alleged trade secrets with particularity); *Analog Devices, Inc. v. Michalski*, 579 S.E.2d 449, 453-454 (N.C. App. 2003) (finding it generally accepted that a

plaintiff identify the secret with sufficient particularity to enable the defendant to determine that which he is accused of misappropriating).

In addition to its failure to identify any actual trade secret, it is well-established that anything disclosed in a patent cannot be a trade secret. *Coenco, Inc. v. Coenco Sales, Inc.*, 940 F.2d 1176, 1179 & n.3 (8th Cir. 1991). Yet here, the Monsanto software that supposedly incorporates the "Nutrient Optimizer" appears to be referenced in at least 52 separate patents belonging to Monsanto or the Climate Corporation.[4] Many of these patents appear to cover the precise claims that the government asserts are secret:

Indictment Reference (Para. 15)	Patent Reference to Software at Issue
Crop growth module, simulating plant growth and nutrient uptake	Generating digital models of relative yield of a crop based on nitrate values in the soil, U.S. Patent No. 10,628,925; Data assimilation for calculating computer-based models of crop growth, U.S. Patent No. 10,402,919; Generating digital models of nutrients available to a crop over the course of the crop's development based on weather and soil data, U.S. Patent No. 9,519,861
Surface hydrology module, which described moisture dynamics between precipitation and infiltration	Statistical blending of weather data sets, U.S. Patent No. 10,634,817; Forecasting national crop yield during the growing season using weather indices, U.S. Patent No. 10,529,036
Soil moisture module, which simulated water availability and distribution	Estimating soil properties within a field using hyperspectral remote sensing, U.S. Patent No. 10,705,253 (Dr. Xiang is the lead inventor of this patent); Estimating rainfall adjustment values, U.S. Patent No. 10,371,863;

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[4]   These are just the Monsanto patents relevant to Nutrient Optimizer the defense has been able to locate. Our search for relevant patents owned by other parties continues.

	Estimating confidence bounds for rainfall adjustment values, U.S. Patent No. 10,467,540
Surface and soil temperature module, which simulated the temperature at the top of the soil and subsurface	Systems, methods, and apparatus for soil and seed monitoring, U.S. Patent No. 10,512,212; Long range temperature forecasting, U.S. Patent No. 10,175,387
Soil chemistry module which simulated nutrient movement and associated processes	Generating digital models of nutrients available to a crop over the course of the crop's development based on weather and soil data, U.S. Patent No. 9,519,861; Estimating nitrogen content using hyperspectral and multispectral images, U.S. Patent No. 10,609,860
Tillage, harvest, and crop residue module	Generating digital models of crop yield based on crop planting dates and relative maturity values, U.S. Patent No. 10,694,686; Agricultural management recommendations based on blended model, U.S. Patent No. 10,684,612; Computer-implemented calculation of corn harvest recommendations, U.S. Patent No. 10,586,158

The government does not seem to dispute that there are many publicly available, open-source software programs that estimate nutrient uptake by crops.[5] But the government does nothing to allege or demonstrate that the document at issue is anything more than a variant of the known, well-established science, making it (even if secret) readily ascertainable and not subject to trade secret protection. *See Wal-Mart Stores v. P.O. Mkt.*, 66 S.W.3d 620, 633 (Ark. 2002); *Integral Systems, Inc. v. Peoplesoft, Inc.*, 1991 U.S. Dist. LEXIS 20878, at *38 (N.D. Cal. July 19, 1991) (holding that information known to members of an industry cannot be trade secret).

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[5]   *See, e.g*., Agricultural Production Systems Simulator, available at www.apsim.info.

Thus, it cannot be in a case involving admittedly public information that the government can point to a voluminous document, much if not all of which is in the public domain, and claim, without more, that it is a "combination" trade secret.[6] *Imax Corp. v. Cinema Techs., Inc.*, 152 F.3d 1161, 1167 (9th Cir. 1998) (holding that where the alleged secret was "sophisticated and highly complex," specificity was required in order to allow the parties and trier of fact to discern what the trade secret is and allow the defendant to prepare a rebuttal). It has long been the law of combination trade secrets that the elements of the combination, and what makes the combination unique, must be identified. *Julie Research Lab. v. Select Photographic Eng'g*, 810 F. Supp. 513, 519 (S.D.N.Y. 1992) *aff'd in relevant part* (citing *Xerox Corp. v. IBM Corp.*, 64 F.R.D. 367 (S.D.N.Y. 1974); *Struthers Scientific & Int'l Corp. v. Gen. Foods Corp.*, 51 F.R.D. 149, 153 (D. Del. 1970) ("[P]laintiff should . . . specifically describe what particular combination of components it has in mind, how those components are combined, and how they operate in a unique combination.")).

Conclusion

The government seems to be attempting to construct a trade secret consisting of an empty vessel that it will fill only at trial, depriving Dr. Xiang of the opportunity to prepare a defense. This tactic is frequently deployed in trade secret litigation, which is why courts require civil plaintiffs to disclose and describe the alleged trade secret with particularity. No less should be required of the government in a criminal case. Dr. Xiang therefore requests that the government be ordered to provide a bill of particulars that identifies, at a minimum:

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[6]   The government points out that it has adhered to an open file discovery protocol and argues that this obviates the need to identify the trade secret with particularity. While Dr. Xiang appreciates the government's position on discovery, much of the discovery is not relevant to the definition of the trade secret. In fact, as the government had previously pointed out, the document at issue is the only document marked "highly confidential." The identification of the trade secret is the core issue in this case, not unrelated discovery.

(1)   the information contained in the document that is publicly known;

(2)   the specific information contained in the document that it believes to be secret and not

publicly known (*see Myrio Corp. v. Minerva Network, Inc.*, 2001 U.S. Dist. LEXIS 10461, at *3

(N.D. Cal. 2001);

(3)   if the alleged trade secret consists of a combination, provide a narrative description (and

not a cross-reference to particular documents) that describes:

      (i)   the specific combination of elements;

      (ii)   how the specific elements functionally interrelate to form a combination; and

      (iii)   how the combination creates value above the sum total of its elements (*id.*); and

(4)   if any algorithms are alleged to be part of the alleged trade secret, the government should

be ordered to identify the precise combination of functions alleged to constitute each algorithm

and where in the 86-page document the algorithm is written.

Dated: July 27, 2020   Respectfully submitted,

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